

City of Corvallis

Salmon Response Plan

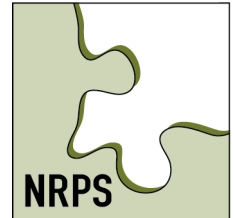
Prepared for:

City of Corvallis, Oregon
Public Works Department
PO Box 1083
Corvallis OR 97339-1083

August 20, 2004

Prepared by:

Bill Jones, Ph.D.
Robert Dillinger, Ph.D.
Natural Resource Planning Services, Inc.
3030 SW Moody Avenue, Suite 105
Portland, Oregon 97201
503.222.5005



Appendix 9

Detailed Solution Options Tables

CORVALLIS ESA SECTION 4(D) LIMIT 12 – CITIZEN BEHAVIOR OPTIONS

The following are identified Citizen Behavior Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

CITIZEN BEHAVIOR OPTIONS– TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
Public Education/ Involvement	<ul style="list-style-type: none"> Public education/Involvement to increase awareness & change behavior Develop a formal Public Education Plan that outlines the program and activities/elements to be used to encourage changes in public behavior. Plan would provide overall guidance and direction to public education and include program elements, milestones and evaluation criteria to measure effectiveness. Would rely, in part on the following existing programs: <ul style="list-style-type: none"> ➤ Use Public Works Dept. Stormwater public education specialist to organize plan since stormwater public involvement requires similar activities. ➤ Use other existing programs to educate public on what they can do to contribute to preserving Chinook salmon habitat 	Most programs currently exist and have been encouraging changes in citizen behavior.	Estimated additional finance support for these activities: approximately \$30,000 annually. Would be combined with City's existing stormwater MP implementation program activities.	Voluntary Participation	1,2,3,5,6,7,8,9,10

CITIZEN BEHAVIOR OPTIONS– TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<p>and maintain water quality. Existing programs would include Park & Recreation Dept. Urban Forestry program)</p> <ul style="list-style-type: none"> ➤ Prepare, print and distribute brochures on recycling and conservation. ➤ Enlist other non-city programs to help educate the public (e.g., Master Gardener Program, chamber of Commerce, Environmental Center, neighborhood associations, Mary's River Watershed Council, etc.). 				
Incentives	<ul style="list-style-type: none"> • Support incentives to change citizen behavior. Incentive programs would be an element in the Public Education Plan. The following programs will help to reduce water need demand. <ul style="list-style-type: none"> ➤ Appliance rebates ➤ Recycling programs including yard waste ➤ Water conservation programs 	Existing programs	No ESA-related cost since these are existing programs	Voluntary Participation	2,3,8,10
Pollution Prevention	<ul style="list-style-type: none"> • Pollution prevention program (PPP). While a separate program and requirement. The Public Education Plan would reference the PPP as part of 	Existing programs	No ESA cost: required under different regulations	Voluntary Participation	1-3,5-12

CITIZEN BEHAVIOR OPTIONS– TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<p>the City's overall effort.</p> <ul style="list-style-type: none"> ➤ Encourage both citizens and businesses to participate ➤ Existing PPP is currently being updated and expanded to meet Clean Water Act (CWA) requirements. 				
Landscaping	<ul style="list-style-type: none"> • Encourage appropriate landscaping activities. Landscaping education programs would be an element in the Public Education Plan. Contents would include: <ul style="list-style-type: none"> ➤ Use of native species ➤ Reduction in chemical application ➤ Yard debris recycling ➤ Increase use of pervious materials on residential lots 	Existing programs	No ESA cost: Stormwater MP implementation program.	Voluntary Participation	3,8,10
Household	<ul style="list-style-type: none"> • Encourage use of “fish friendly” or low impact non-toxic household cleaners/chemicals. Household conservation practices would be an element in the Public Ed 	Existing programs	No ESA cost: Stormwater MP implementation program.	Voluntary Participation	2,3,8,9,10
Vehicle Maintenance	<ul style="list-style-type: none"> • Encourage households and businesses to use appropriate disposal/recycling of vehicle maintenance liquids and equipment. Element of 	Existing programs	No ESA cost: Stormwater MP implementation program.	Voluntary Participation	2,3,12

CITIZEN BEHAVIOR OPTIONS– TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	the Public Education Plan. ➤ Encourage use of spill containment for home auto repairs				
Riparian Areas	<ul style="list-style-type: none"> Encourage citizen protection of riparian areas. Riparian area preservation education would be an element in the Public Education Plan. ➤ Volunteering to help clean riparian areas and planting native vegetation ➤ Stewardship programs 	Existing programs	No ESA cost: Stormwater MP implementation program.	Voluntary Participation	2,3,5,7,8,9,10,12

CORVALLIS ESA SECTION 4(D) LIMIT 12 – LAND USE OPTIONS

The following are identified Land Use Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

LAND USE OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
Zoning	<ul style="list-style-type: none"> Fully protect from development through zoning portions of stream corridor(s) that are deemed critical to preserve Chinook habitat and water quality. The following examples: <ul style="list-style-type: none"> ➤ Create protection zones (Conservation Open Space zone that fully protects critical areas) & apply at specific locations to protect habitat & water quality ➤ Create overlay zone designed to protect Chinook & Water Quality 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1-12
	<ul style="list-style-type: none"> Zoning & Open Space <ul style="list-style-type: none"> ➤ Increase open Space requirement for all zones 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1,3,5,11,12
	<ul style="list-style-type: none"> Allow density transfers to increase open space Allow density transfers onsite to protect selected resource areas 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1,3,5,11,12

LAND USE OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<ul style="list-style-type: none"> Use resource information from Goal 5, 6 & 7 project to craft ESA protection policies and actions 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1-12
	<ul style="list-style-type: none"> Limit uses within Zones <ul style="list-style-type: none"> Uses within stream corridors or specific Reaches or Watersheds would have limited use depending on location. 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1,3,5,6,11,12
Development Standards – Land Development Code	<ul style="list-style-type: none"> Standards to decrease impervious surface <ul style="list-style-type: none"> Reduce parking maximums where transit is available. Require increase in bicycle parking Reduce base ratios for auto parking 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	2,3,6,10,11,
	<ul style="list-style-type: none"> Modify street design standards <ul style="list-style-type: none"> Reduce street widths (stay within emergency access widths) Require bike lanes Allow one-sided street parking Incorporated “Green Street” design standards (e.g., us planting strips for stormwater treatment) 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	2,3,4,8,11,

LAND USE OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<ul style="list-style-type: none"> Require vegetation protection <ul style="list-style-type: none"> ➤ Vegetation as buffer ➤ Landscaping with native species 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	3,6,8,11,
	<ul style="list-style-type: none"> Buffer areas <ul style="list-style-type: none"> ➤ Adjust buffer requirements. depending on quality of meta-reach. High quality meta-reaches would have more restrictive development standards than low quality meta-reaches in order to prevent them from becoming degraded. ➤ Apply greater mitigation requirements in lower quality meta-reaches in order to prevent further degradation. 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1-12
	<ul style="list-style-type: none"> Dedications & Easements to protect riparian function <ul style="list-style-type: none"> ➤ Formula based approach to determine size/width of easement. 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1-12
	<ul style="list-style-type: none"> Develop specific design standards for stream crossings Identify appropriate locations for stream crossings to minimize impact to water quality and fish habitat. 	Phase III program December 2004 implementation	To be Provided by FT	ESA Related additional cost for private development	1,2,3,4,6,8,11

LAND USE OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
		date.			
	<ul style="list-style-type: none"> Provide incentives to remove development w/in 100 yr. flood plain. 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1-12
	<ul style="list-style-type: none"> Require development standards that address wetland and other sensitive areas/lands 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1,2,3,5,6,8,9,11
	<ul style="list-style-type: none"> If necessary, create specific land use standards that address Chinook Refuge Areas. 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1-10,12
	<ul style="list-style-type: none"> Prepare land develop standards that are specific to Mary's River area to take account of the unique features of the River 	Phase III program December 2004 implementation date.	To be Provided by FT	ESA Related additional cost for private development	1-12

CORVALLIS ESA SECTION 4(D) LIMIT 12 – PARKS & RECREATION PLANNING & O&M OPTIONS

The following are identified Parks and Recreation Planning and Operations and Maintenance Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

PARKS AND RECREATION PLANNING & O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
Neighborhood Park Planning	<ul style="list-style-type: none"> • Develop new park siting, planning, & design <ul style="list-style-type: none"> ➤ Incorporate Water Quality Sensitive Design ➤ Eco-friendly design materials ➤ Site where impacts are lower ➤ Maintaining surface & sub-surface flows by decreasing the amount of impervious surface, compaction & contaminants. ➤ Site active recreation parks outside stream corridors. ➤ Limit corridor crossings with culverts. ➤ Develop park programs that balance recreation & environmental stewardship. ➤ Have goals that reflect sensitivity towards ESA, fish and wildlife needs, & Water Quality ➤ Tree Cover (overstory): maintain composition and cover. ➤ Understory (shrub/herbaceous layer): maintain composition and cover. ➤ Goal to maintain historic water flow and hydrology 	CIP 2004-2005	\$100,000	No ESA Related Cost – covers public facilities	1-12

PARKS AND RECREATION PLANNING & O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<ul style="list-style-type: none"> ➤ Minimize need for additional treatment for stormwater ➤ Native species planting where appropriate for mitigation and park plant community. Continue policy of “right plant right location.” ➤ Place parks on one-side of the creek or use of bridges to minimize impacts ➤ Maintain stream corridors ➤ Develop partnerships to acquire land or conservation easements. 				
Open Space & Recreation Service Plan	<ul style="list-style-type: none"> • Develop an open space management plan and recreation service plan for all passive park areas. 	Underway for Owens Farm. To be expanded to other open space areas.	\$70k for Owens Farm.	No ESA Related Cost – covers public facilities	1-12
Capital Improvement Plan	<ul style="list-style-type: none"> • Integrate ESA concerns into the Parks & Recreation capital improvement plan (CIP). 	CIP 2004-2005	Cost based on park facility inventory	No ESA Related Cost – covers public facilities	1-12
Operations & Maintenance Manual	<ul style="list-style-type: none"> • Prepare operations and maintenance (O&M) manual that provides guidance for entire parks system. <ul style="list-style-type: none"> ➤ Use existing Parks & Recreation maintenance management plan as template for O&M Manual 	Operations budget 2004-2005	\$50K	No ESA Related Cost – covers public	2,3,6,8,9,11,12

PARKS AND RECREATION PLANNING & O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<ul style="list-style-type: none"> ➤ O&M manual identify standards and provide guidance for activities for all sites with instructions at specific sites (e.g., vegetation maintenance, mowing, fertilizer and any herbicide/pesticide applications, etc.). ➤ Map & identify sites & locations for specific activities 			facilities	
Park Inventory	<ul style="list-style-type: none"> • Inventory of Park facilities (e.g., activities, programs, structures, locations, & O&M practices) and assess how fits with goals for ESA. ➤ Compare to ESA requirements & determine what modifications are needed to minimize impact to water quality and fish habitat. 	CIP 2004-2005	\$100k	No ESA Related Cost – covers public facilities	1-12
Existing Parks	<ul style="list-style-type: none"> • Existing Parks <ul style="list-style-type: none"> ➤ Mitigate activities on-site – remove/replace structures & impervious surface with low impact materials ➤ Retro fit and mitigate impacts with low impact design ➤ Identify parks located in sensitive & riparian areas & determine mitigation needs. ➤ Implement agriculture conservation plans where agriculture leases & service agreements exist. 	Multi-year process	Cost based on park facility inventory	No ESA Related Cost – covers public facilities	2,3,6,8,11,12
Park Construction/Retrofit	<ul style="list-style-type: none"> • Construction & Retrofit <ul style="list-style-type: none"> ➤ Time construction to minimize erosion & sediment transfer, soil compaction, & impact to fish habitat 	Multi-year process	Cost based on park facility inventory	No ESA Related Cost – covers public	1-4,8-12

PARKS AND RECREATION PLANNING & O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized. facilities	ESA Section 4(d) Limit 12 Consideration that it meets.
Mini Parks	<ul style="list-style-type: none"> Retrofit existing site activities and facility placement with low impact alternatives. Use Best Management Practices (BMPs) to maintain low impact. 	Multi-year process	Cost based on park facility inventory	No ESA Related Cost – covers public facilities	1-12
Specific Parks	<ul style="list-style-type: none"> BMX Park <ul style="list-style-type: none"> ➤ Retro fit and mitigate or move to reduce impact on stream water quality and fish habitat. ➤ Creosote post removal ➤ Remove paved access ramp and boat structures 	CIP 2004-2005	\$50-60K	No ESA Related Cost – covers public facilities	1,2,8,12
	<ul style="list-style-type: none"> Timberhill School Park <ul style="list-style-type: none"> ➤ Restore wetland and drainage impacts. 	Underway (5 yr. process)	\$600k-700k (unrelated to ESA project)	No ESA Related Cost – covers public facilities	1,2,6,8,12
	<ul style="list-style-type: none"> Mary's River Natural Park <ul style="list-style-type: none"> ➤ Install floating dock to minimize impacts ➤ Use low impact materials for facilities and structures. 	Multi-year process	Cost based on park facility inventory	No ESA Related Cost – covers public facilities	1,2,3,6,8,10,12
	<ul style="list-style-type: none"> Bruce Starker Park <ul style="list-style-type: none"> ➤ Implement management strategy to minimize impact of ornamental pond. ➤ Treat discharge of Stormwater (install oil separator) ➤ Redesign and Relocate parking Lot 	Multi-year process	Cost based on park facility inventory	No ESA Related Cost – covers public facilities	1,2,6,8,12

PARKS AND RECREATION PLANNING & O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
Equipment Maintenance	<ul style="list-style-type: none"> Equipment maintenance at Avery Park <ul style="list-style-type: none"> ➤ Provide guidance for maintenance facility: include containment and treatment of wash-down & run-off. ➤ Provide appropriate storage facility for chemicals and liquids. 	CIP 2004-2005	\$300k-400k (entire cost is not ESA driven)	No ESA Related Cost – covers public facilities	2,12
Organic Debris Disposal	<ul style="list-style-type: none"> Chip Pile run-off & containment – several options <ul style="list-style-type: none"> ➤ #1: Develop methods to capture, treat, and discharge run-off from organic debris at existing location ➤ #2: move Pile elsewhere to prevent discharge to Mary's River (e.g., move to Process Recovery Center) ➤ #3: Reduce, restrict, or eliminate 3rd party organic debris to reduce potential liquid run-off. 	Timing will depend on option	Cost based on park facility inventory	No ESA Related Cost – covers public facilities	2,6,9,11,12

CORVALLIS ESA SECTION 4(D) LIMIT 12 – PRIVATE LAND DEVELOPMENT OPTIONS

The following are identified Private Land Development Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

PUBLIC CONSTRUCTION SPECIFICATION OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
On-Site Construction Activities	<ul style="list-style-type: none"> City requires (written in bid or permit requirements) contractor to prepare a construction site plan that addresses: <ul style="list-style-type: none"> ➤ Appropriate disposal of construction materials (concrete, soil. Materials) ➤ Mitigation of impacts should plan fail and damage occurs off-site ➤ Appropriate disposal of demolition materials ➤ Monitoring plan to assure compliance. 	Immediately	Nominal cost	No ESA Cost: Required by other programs	2,3,6,9,11,12
Construction site Monitoring & Enforcement	<ul style="list-style-type: none"> Monitoring & Enforcement of construction site plan: <ul style="list-style-type: none"> ➤ Contractor or materials supplier performs monitoring & self enforcement. ➤ City performs enforcement – City currently has site inspectors. 	Ongoing	No ESA Cost	No ESA Cost: Required by other programs	11,12
Hazardous Materials	<ul style="list-style-type: none"> Use and properly dispose of construction related hazardous materials: <ul style="list-style-type: none"> ➤ Dispose of hazardous materials in a manor that does not impact water quality and salmonid habitat. ➤ Require specific clean-up practices for solvent materials that are used at the construction site. 	Ongoing	No ESA Cost	No ESA Cost: Required by other programs	2,9,12
Pipe Commissioning	<ul style="list-style-type: none"> Use proper pipe flushing activities <ul style="list-style-type: none"> ➤ Follow DEQ requirements for flushing and 	Ongoing	No ESA Cost	No ESA Cost: Required by	2,9,12

PUBLIC CONSTRUCTION SPECIFICATION OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	dechlorination. I			Stormwater MP.	
Erosion Control Ordinance	<ul style="list-style-type: none"> Erosion control ordinance that requires appropriate erosion control practices on-site. <ul style="list-style-type: none"> ➤ City is currently modifying its erosion control program and develop an erosion control ordinance ➤ Containment of run-off (stormwater, wash-down, etc.) ➤ Reduce the potential contamination effect to streams & groundwater. 	Fall 2003	No ESA Cost	No ESA Cost: Required by Stormwater MP.	2,6,9,11,12
Sustainability	<ul style="list-style-type: none"> City should encourage construction in the City to meet LEED standards (Leadership in Energy & Environmental Design). Land Development Code will need to incorporate these activities to ensure that they are used in public construction projects. <ul style="list-style-type: none"> ➤ City is currently using LEED for some of its own building practices, but should expand efforts to have LEED incorporated into private land development and construction Require “Eco-Friendly”, low impact materials and recycling practices <ul style="list-style-type: none"> ➤ Encourage use of materials that would reduce impact on environment including (paints, construction materials, etc.) ➤ City consider providing list of products that are accepted/prohibited or, alternatively, ➤ City define “fish friendly” criteria that contractors/suppliers can use to determine construction materials Construction Siting 	Ongoing	No ESA Cost	No ESA Cost: City has implemented these activities as part of other programs.	1-12

PUBLIC CONSTRUCTION SPECIFICATION OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<ul style="list-style-type: none"> ➤ Incorporated siting criteria that will reduce negative impacts on water quality & fish habitat (e.g., building placement, buffer areas, utility location, drainageway location, etc.). Much of this might already be incorporated into the City's Land Development Code. 				

CORVALLIS ESA SECTION 4(D) LIMIT 12 – PUBLIC CONSTRUCTION SPECIFICATION OPTIONS

The following are identified Public Construction Specification Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

PUBLIC CONSTRUCTION SPECIFICATION OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
On-Site Construction Activities	<ul style="list-style-type: none"> City requires (written in bid or permit requirements) contractor to prepare a construction site plan that addresses: <ul style="list-style-type: none"> ➤ Appropriate disposal of construction materials (concrete, soil. Materials) ➤ Mitigation of impacts should plan fail and damage occurs off-site ➤ Appropriate disposal of demolition materials ➤ Monitoring plan to assure compliance. 	Summer 2003	Nominal cost	No ESA Related Cost: Required by other programs	2,3,6,9,11,12
Construction site Monitoring & Enforcement	<ul style="list-style-type: none"> Monitoring & Enforcement of construction site plan: <ul style="list-style-type: none"> ➤ Contractor or materials supplier performs monitoring & self enforcement. ➤ City performs enforcement – City currently has site inspectors. 	Ongoing	No ESA Cost	No ESA Cost: Required by other programs	11,12
Hazardous Materials	<ul style="list-style-type: none"> Use and properly dispose of construction related hazardous materials: <ul style="list-style-type: none"> ➤ Dispose of hazardous materials in a manor that does not impact water quality and salmonid habitat. ➤ Require specific clean-up practices for solvent materials that are used at the construction site. 	Ongoing	No ESA Cost	No ESA Cost: Required by other programs	2,9,12
Pipe Commissioning	<ul style="list-style-type: none"> Use proper pipe flushing activities <ul style="list-style-type: none"> ➤ Follow DEQ requirements for flushing and 	Ongoing	No ESA Cost	No ESA Cost: Required by	2,9,12

PUBLIC CONSTRUCTION SPECIFICATION OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	dechlorination. I			Stormwater MP.	
Erosion Control Ordinance	<ul style="list-style-type: none"> Erosion control ordinance that requires appropriate erosion control practices on-site. <ul style="list-style-type: none"> City is currently modifying its erosion control program and develop an erosion control ordinance Containment of run-off (stormwater, wash-down, etc.) Reduce the potential contamination effect to streams & groundwater. 	Fall 2003	No ESA Cost	No ESA Cost: Required by Stormwater MP.	2,6,9,11,12
Sustainability	<ul style="list-style-type: none"> City should encourage construction in the City to meet LEED standards (Leadership in Energy & Environmental Design). Land Development Code will need to incorporate these activities to ensure that they are used in public construction projects. <ul style="list-style-type: none"> City is currently using LEED for some of its own building practices, but should expand efforts to have LEED incorporated into private land development and construction Require “Eco-Friendly”, low impact materials and recycling practices <ul style="list-style-type: none"> Encourage use of materials that would reduce impact on environment including (paints, construction materials, etc.) City consider providing list of products that are accepted/prohibited or, alternatively, City define “fish friendly” criteria that contractors/suppliers can use to determine construction materials Construction Siting 	Ongoing	No ESA Cost	No ESA Cost: City has implemented these activities as part of other programs.	1-12

PUBLIC CONSTRUCTION SPECIFICATION OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<ul style="list-style-type: none"> ➤ Incorporated siting criteria that will reduce negative impacts on water quality & fish habitat (e.g., building placement, buffer areas, utility location, drainageway location, etc.). Much of this might already be incorporated into the City's Land Development Code. 				

CORVALLIS ESA SECTION 4(D) LIMIT 12 – STORMWATER PLANNING & O&M OPTIONS

The following are identified Stormwater Planning and Operations and Maintenance Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

STORMWATER PLANNING AND O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
Stormwater Planning and Capital Improvement Plan (CIP)	<ul style="list-style-type: none"> Integrate Stormwater Master Plan Policies (SWMP) outlined in Chapter 5 into ESA program <ul style="list-style-type: none"> General policies in Chapter 5 that are useful for the ESA response plan include: maintaining natural hydrologic processes, protecting & restoring natural resources and ecosystem functions; protecting and improving water quality; addressing maintenance requirements and allowing for maintenance access; incorporating community awareness and information exchange. SWMP recognizes the need to integrate the SWMP Policies with the ESA program through application of SWMP policies to Municipal, Residential, Commercial, and Industrial (MRCI) development, which is ESA Section 4(d) Rule Limit 12. Specific SWMP recommended actions that benefit the ESA program include programs that reduce sediment transfer & erosion; reduce contaminants in surface & groundwater; enhance native vegetation; protect & enhance stream channels; protect uplands 	SWMP Implementation 2003 to December 2004	Some elements in SWMP are ESA related	ESA Related additional cost for private development	1-12

STORMWATER PLANNING AND O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	& wetlands; manage floodplain; restore stream properly functioning condition; provide stream buffers; preserve and enhance habitat; provide appropriate shade; restore degraded streams & riparian areas.				
Erosion Control Ordinance	<ul style="list-style-type: none"> Pass & Implement Erosion control Ordinance <ul style="list-style-type: none"> City is currently developing an erosion control ordinance 	Fall 2003	Cost is not ESA related	No ESA Related Cost – covers public facilities	2,5,6,7,9,11,12
Operations and Maintenance	<ul style="list-style-type: none"> Develop Stormwater O&M Plan <ul style="list-style-type: none"> Phase II activity (USEPA stormwater discharge permit requirements) 	Implementation 2003 to December 2004	Cost is not ESA related	No ESA Related Cost – covers public facilities	2,3,6,8,9,12
Monitoring	<ul style="list-style-type: none"> Develop stormwater monitoring Plan to measure improvement in water quality in streams and creeks <ul style="list-style-type: none"> Incorporate steps and procedures for corrections where program does not meet improvement criteria. Two Elements to the Monitoring Program – on-site monitoring and programmatic monitoring On-site Monitoring: actual site (field) measurements that are taken to determine effectiveness of program. Programmatic Monitoring: Assessment of the programs that are implemented to meet ESA goals. 	Implementation 2003 to December 2004	Cost is not ESA related	No ESA Related Cost – covers public facilities	11,12

CORVALLIS ESA SECTION 4(D) LIMIT 12 – TRANSPORTATION PLANNING & O&M OPTIONS

The following are identified Transportation Planning and Operations and Maintenance Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

TRANSPORTATION PLANNING AND O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
Planning Elements	<ul style="list-style-type: none"> Goal to minimize impacts caused by proximity to streams and water bodies (many of these goals are also included in the SWMP Chapter 5 Policies). <ul style="list-style-type: none"> ➤ Minimize proximity of streets, pedestrian and bike paths, and parking areas to streams, creeks, water bodies and wetlands Crossing streams and water bodies <ul style="list-style-type: none"> ➤ Use bridges or open bottom structures instead of culverts at creek crossings to minimize impact to streams ➤ Minimize structures (bents and other roadway or bridge structures) in creeks and streams 	Ongoing	Where bridges or open bottom structures are needed instead of culverts cost could be 1.5 to 10 times higher.	No ESA Related Cost – covers public facilities	1-12
Transportation Demand Management	<ul style="list-style-type: none"> Transportation Demand Management (TDM) Strategies <ul style="list-style-type: none"> ➤ Identify and implement strategies in the 1995 Transportation Alternatives Study to help improve water quality, reduce stormwater run-off, and reduce impervious surface cover. ➤ Reduce private vehicle trip generation by encouraging alternative transportation methods (bike, bus, carpooling, pedestrian, walking) 	Ongoing	Nominal ESA related cost – City has policy to voluntarily incorporate TDM strategies into	No ESA Related Cost unless made mandatory – covers public facilities	1,2,3,4,6,11,12

TRANSPORTATION PLANNING AND O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<ul style="list-style-type: none"> ➤ Encourage telecommuting ➤ Require reduction in vehicle miles traveled (VMT). As a member of the Corvallis Area Metropolitan Planning Organization (CAMPO) Corvallis can now implement programs that require VMT reduction. 		transportation program.		
Transportation System Plan	<ul style="list-style-type: none"> • Approve the Transportation System Plan (TSP) <ul style="list-style-type: none"> ➤ Review plan to make sure that specifications incorporate habitat and water quality ➤ Revise projects that do not meet habitat and water quality requirements 	Within 2 years.	ESA related cost. Amount will depend on design changes.	No ESA Related Cost – covers public facilities	1-12
Capital Improvement Plan (CIP)	<ul style="list-style-type: none"> • Incorporate low impact design into CIP transportation projects <ul style="list-style-type: none"> ➤ Incorporate SWMP policies as part of the evaluation criteria to determine low impact design. 	Ongoing	Nominal ESA-related cost – SWMP policies	No ESA Related Cost – covers public facilities	8,9,12
Design Specifications	<ul style="list-style-type: none"> • Consider incorporating the following design adjustments into future transportation projects. These design adjustments would become part of the TSP. <ul style="list-style-type: none"> ➤ Street widths based on street classifications (e.g., one-side parking, one-side sidewalks) ➤ Consider bio-swales and other vegetative buffers to prevent run-off to streams along streets and in parking lots ➤ Consider different materials (e.g., pervious materials, vegetation, etc.) ➤ Consider vegetation planting wherever possible to reduce temperature and evaporation. 	Ongoing	Nominal ESA related cost – City has policy to supported by SWMP to incorporate design specifications that meet SWMP goals.	No ESA Related Cost – covers public facilities	2,6,8,9,12

TRANSPORTATION PLANNING AND O&M OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	<ul style="list-style-type: none"> ➤ Capture & treat stormwater run-off ➤ Reduce the off-street parking space ratio from 1:400 square feet of floor space to 1:1,000 square feet of floor space ➤ Use concrete instead of asphalt to reduce run-off temperature. 				
Street Operation & Maintenance (O&M)	<ul style="list-style-type: none"> • Prepare and submit the ESA Section 4(d) Rule Limit 10 – Routine Road Maintenance Activities Application to NOAA Fisheries. ➤ Activities will address City Streets and Airport. 	Submit within 2 years	Entirely ESA related cost: Development cost Annual cost	No ESA Related Cost – covers public facilities	2,6,9,11,12

CORVALLIS ESA SECTION 4(D) LIMIT 12 – WASTEWATER TREATMENT OPTIONS

The following are identified Wastewater Treatment Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

WASTEWATER TREATMENT OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
Wastewater Treatment	<ul style="list-style-type: none"> Collection <ul style="list-style-type: none"> ➤ Increase capacity of pump stations to reduce likelihood of overflows. Also, install auxiliary power source. ➤ Disconnect drains on private and public facilities ➤ Repair and replace damaged and broken pipes ➤ Flush and clean pipes to maximize capacity 	June 2003 (pump station improvements), Other activities ongoing	No ESA related cost. Part of ongoing WWT activities & regulatory compliance.	No ESA Related Cost – covers public facilities	5,11,12
Facility Oils & Grease Program	<ul style="list-style-type: none"> FOG <ul style="list-style-type: none"> ➤ Enforce FOG Program to reduce grease build-up in pipelines, which reduce their capacity to convey wastewater. ➤ Regulatory requirement for wastewater treatment 	Ongoing	No ESA related cost. Part of ongoing WWT activities & regulatory compliance.	No ESA Related Cost – covers public facilities	11,12
Master Plan and CIP	<ul style="list-style-type: none"> Review projects identified in master plan to determine impact on Chinook salmon and water quality. <ul style="list-style-type: none"> ➤ Incorporate Chinook salmon and water quality design elements for projects that have negative impact ➤ Investigate use of grey water separation to decrease flow to wastewater treatment plan and to conserve water ➤ Investigate wastewater reuse. 	Ongoing	No ESA related cost. Part of ongoing WWT activities & regulatory compliance.	No ESA Related Cost – covers public facilities	1-12

WASTEWATER TREATMENT OPTIONS – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
	➤ Encourage citizen and business conservation measures to reduce wastewater discharge				
Discharge	<ul style="list-style-type: none"> Incorporate temperature requirements for Chinook salmon in upcoming NPDES permit Incorporate temperature requirements for Chinook salmon in TMDLs 	Renewal 2004	No ESA related cost. Part of regulatory compliance.	No ESA Related Cost – covers public facilities	6,11,12

CORVALLIS ESA SECTION 4(D) LIMIT 12 – WATER SUPPLY AND O&M OPTIONS

The following are identified Water Supply and Operations and Maintenance Options for the ESA Section 4(d) Limit 12. Cost estimates have been included where calculable (2003 dollars).

WATER SUPPLY OPTIONS AND O&M – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
Water Supply Conservation	<ul style="list-style-type: none"> Conservation Measures <ul style="list-style-type: none"> ➤ Encourage through education public and private business conservation measures to reduce water consumption ➤ Use stepped rates to reduce water consumption ➤ Appliance rebates ➤ Encourage use of native vegetation to reduce water needs 	ongoing	No related cost. Part of ongoing water supply activities & regulatory compliance.	No related cost – covers public facilities	8,10
Water Intake	<ul style="list-style-type: none"> Obtain ESA Section 4(d) Limit 9 – Water diversion screen 	September 2003	\$700k improvement cost; \$3,000/yr. maintenance cost.	Paid by utility rates	10,11,12
Distribution	<ul style="list-style-type: none"> Flushing system to comply with DEQ requirements <ul style="list-style-type: none"> ➤ Reduce flushing distribution system and blow-off, which increases water supply demand ➤ De-chlorination: require when system flushing must be done. 	Ongoing	No related cost. Part of ongoing water supply activities &	No related cost – covers public facilities	9

WATER SUPPLY OPTIONS AND O&M – TIMING, COST, AND LIMIT 12 CONSIDERATION COMPLIANCE					
Category	Option Description	Implementation timing (i.e., length of time from present before option could be initiated)	Direct Cost (cost to City to implement option in today's dollars – order of magnitude)	Indirect Cost (cost to private citizens to comply with option – today's dollars). May have to be annualized.	ESA Section 4(d) Limit 12 Consideration that it meets.
			regulatory compliance.		
Operation and Maintenance	<ul style="list-style-type: none"> • Replace or repair pipelines broken or damaged • Provide secondary containment for spills. • Backwash activities performed to minimize impact on streams <ul style="list-style-type: none"> ➤ De-chlorination of backwash water 	Ongoing	No ESA related cost. Part of ongoing water supply activities & regulatory compliance.	No ESA Related Cost – covers public facilities	10,11,12